Math Challenge II

Documentation Manual - Commodore 64 Version

ORBYTE™ SOFTWARE

The ChallengeWare Experience

The ChallengeWare educational series is designed to open new horizons in instructional techniques giving you an opportunity to increase learning comprehension in many areas. With this educational tool, you will be able to reinforce material currently being learned in the classroom, as well as gain practice in basic skills. Presenting programs in a wide variety of subject and skill areas for a range of levels and abilities, the series begins at Pre-school and includes programs that provide challenge to adults as well. Designed by TEACHERS, the series is currently used with great success in over 1,000 schools throughout the United States.

ChallengeWare is an educational experience that will benefit anyone. While enjoying the challenge of each program you explore new concepts, expand knowledge and practice basic skills. The primary emphasis is on content of the lesson and skills being learned. Both lively and colorful, these programs capture and hold your attention. Highly effective graphics serve as motivational techniques to supplement each educational objective.

Programs are largely self-explanatory. When used at home to reinforce familiar content and provide practice, little or no adult guidance is necessary; you need only to understand simple procedures in order to operate the program. When introduced to material for the first time some adult explanation may be needed in both subject information and program procedures, and further discussion may often be beneficial.

The ChallengeWare educational series includes programs in the following subject areas: Pre-school Concepts, Grammar, Reading, Math, Science, Social Studies, Economics, Foreign Languages, Computer Programming, and Logic & Strategy. By introducing quality programs appropriate for a variety of levels and ages, this series provides a significant challenge in learning as you continue to grow and strengthen in ability.

PROGRAM OBJECTIVE

MATH CHALLENGE II is designed for upper elementary students to reinforce the basic mathematical operations of addition, subtraction, multiplication and division through three separate programs. In FAT CHANCE, you 'bet' on the chances of a multiple of a number appearing on the screen. CLAY PIGEONS and MATH GOLF both use numbers and operations to create mathematical expressions with specific totals. Together, all three sections of MATH CHALLENGE II improve skills for working with numbers and operations within the specific frameworks of the mathematical expression.

EQUIPMENT NEEDED

Be sure you use the following equipment when operating this program:

*Commodore 64 keyboard
*Power Supply Box
*Commodore 1541 Disk Drive
*T.V. or Monitor

LOADING THE PROGRAM

In order to load this ChallengeWare program, follow the steps below:

1. Be sure your Commodore 64 equipment is installed correctly as explained in the Commodore User's Manual.

2. Turn the disk drive, monitor, and keyboard on. Be sure the keyboard is the last to be activated. If it is turned on before the other equipment, it may cause damage to the computer.

3. Upon turning on the power, the monitor screen should display the following:

****COMMODORE 64 BASIC V2****
64 K RAM SYSTEM 38911 BASIC BYTES FREE
READY.

If you do not see this screen displayed turn off the equipment and start over again.

4. Put the program disk into the disk drive and shut the drive door.

5. Type LOAD"*",8 then hit the RETURN key. The program will now be loaded into the computer's memory.

6. Upon the completion of the loading procedure, the word READY will be displayed on the monitor screen. At this time, type RUN and again hit the RETURN key.

7. The title frame with the words MATH CHALLENGE II written in color should appear on the screen. Press the SPACE bar. The computer takes a few seconds to load the main program, then a second title frame appears. Press the space bar again to begin.

8. The menu of the program appears on the screen. Notice that there are three lessons to choose from. If you press the numeral 1 key, you can try FAT CHANCE.

Press the numeral 2 key to try CLAY PIGEONS. Press the numeral 3 key to try MATH GOLF. To stop the program at any time, press the up arrow (not the up cursor arrow) key. Press ONE of these keys now.

FAT CHANCE

1. If you pressed the numeral 1 key in the main menu, the computer takes a few seconds to load the program, then a title frame appears displaying the words FAT CHANCE. The question, 'DO YOU WANT SOUND? is located at the base of the screen. Press the Y key (for yes) if you want sound to accompany the lesson. Press the N key (for no) if you do not want sound. Either key advances the display to the lesson description. Press the SPACE bar to view the special key information. The question, 'DO YOU WANT INSTRUCTIONS?' is located at the base of the screen. Press the N key if you do not need to review the lesson instructions, and the lesson begins.

If you press the Y key, the screen advances to the 'INSTRUCTIONS' display. The object of this lesson is to understand number patterns. The example shows that the numbers 5, 10, 15, 20 and 25 are multiples of 5. Press the SPACE bar to continue the instructions. During the lesson you will 'bet' on the chances of a multiple of a number appearing on the screen. You will begin with one hundred points, and take ten bets. Each bet is a ten point risk. Press the SPACE bar to begin the lesson.

2. Each lesson includes ten turns. The 'TURN' number is recorded in the upper left corner of the screen, and is followed by the phrase, 'WILL A MULTIPLE OF __ SHOW UP BELOW?' (The computer randomly selects the number for this phrase on each turn.)

'YOUR SCORE' is listed at one hundred points at the beginning of the ten turns, and appears in the box at the right of the screen. The 'BET' and 'AND WIN' columns are located to the left of 'YOUR SCORE'. If you bet 'YES' on the odds of a multiple appearing, you could win a pre-calculated amount. If you bet 'NO' on the odds of a multiple appearing, you could win ten points. Decide if you want to bet, 'YES' or 'NO,' then press the Y key (for yes) or the N key (for no). Two-digit numbers will begin spinning in the 'MYSTERY NUMBER' box at the base of the screen. Press the SPACE bar once to stop the first digit from spinning; press the SPACE bar a second time to stop the second digit.

3. If the mystery number is a multiple of the number shown in the phrase and you bet 'YES,' the computer prints, 'YOU WIN!' next to the box and updates your score. If the number is a multiple of the original number and you bet 'NO,' the computer prints 'YOU LOSE,' and subtracts ten points from your score.

If the number is not a multiple of the original number and you bet 'YES,' the computer prints 'YOU LOSE,' and subtracts ten points from your score. If the number is not a multiple of the original number and you bet 'NO,' the computer prints 'YOU WIN,' and adds ten points to your score. Press the SPACE bar to continue to the next turn.

4. When you have completed the tenth turn, press the SPACE bar to advance the screen to the 'MATH SCOREBOARD.' This scoreboard summarizes your winning and losing bets, and the number of points with which you started and finished. Press the SPACE bar and you have a choice of repeating the lesson by pressing the numeral 1 key, or returning to the main menu to try CLAY PIGEONS or MATH GOLF by pressing the numeral 2 key.

CLAY PIGEONS

1. If you pressed the numeral 2 key in the main menu, the computer takes a few seconds to load the program, then a title frame with the words CLAY PIGEONS appears. The question, 'DO YOU WANT SOUND?' is located at the base of the screen. Press the Y key (for yes) if you want sound to accompany the lesson. Press the N key (for no) if you do not want sound. Either key advances the display to the lesson description. Press the SPACE bar to view special key information. Press the SPACE bar again and the key information is continued:

Use the '+' key to ADD
Use the '–' key to SUBTRACT
Use the '*' key to MULTIPLY
Use the '/' key to DIVIDE

The question, 'DO YOU NEED INSTRUCTIONS?' is located at the base of the screen. Press the N key if you do not need to review the lesson instructions, and the lesson begins.

If you press the Y key, the 'INSTRUCTIONS' screen appears. The object of this lesson is to hit 'targets' by creating mathematical expressions that equal a predetermined number. Press the SPACE bar and a 'NUMBER EXPRESSION' is illustrated. Your goal is to place three numbers and two operations in expression 'A' or 'B.' A blank represents a space for a number; a white block represents a space for an operation. Press the SPACE bar to continue to a 'SAMPLE PROBLEM. Remember, in a mathematical expression, all work inside parentheses is completed FIRST. Press the SPACE bar to see how expression 'B' is solved. The numbers 5, 2 and 4 are combined with the addition and multiplication operations to total 14. Press the SPACE bar to begin the lesson.

2. Each lesson has ten turns. The TURN number is recorded at the upper left side of the screen. The 'CLAY PIGEONS ARCADE' lists your 'HITS,' 'TARGETS' and 'ACCURACY.' Decide how many 'TARGETS' you want: the mathematical expression which you create must be equal to or as close as possible to this number. Enter ONE number from six to twenty now, and press the RETURN key.

3. The computer lines up the targets along the 'fence' in the center of the screen, and assigns you three random numbers to work with. Choose one expression by pressing the A key to work on expression 'A' or the B key to work on expression 'B.' Press ONE of these keys now, and that expression appears on the screen with a '?' flashing in the first blank. Determine how to arrange the three numbers along with any TWO mathematical operations (+,–,*,/) to create an expression

that is equal to (or closest to without exceding) the number of targets you have chosen. The answer must be a whole number. When you have decided upon the solution, enter a number in the first blank of the expression where the '?' is flashing.

4. The '?' now moves to a block; enter an operation. The '?' moves to the second blank; enter a number and the '?' moves to the second block; enter a second operation. Finally, the '?' moves to the third blank; enter the last number. The expression now contains three numbers and two operations.

5. If your expression combination results in an answer equal to or less than the total number of targets, you score 'HITS.' The number of targets equal to your answer disappears from the fence. Your 'ACCURACY' is updated each turn, based on a ratio of the number of hits you make to the total of possible of targets.

If your answer is not a whole number, is greater than the number of targets you have chosen, less than zero, or you did not use all three numbers, the computer prints, 'TRY AGAIN!' Press the SPACE bar to try another combination for the same expression.

To see how you did, compare your expression's total 'HITS' with the expert in the phrase, 'THE EXPERT SCORED __ USING A OR B' appearing at the base of the screen. The expert's score was the best possible score. Press the SPACE bar to continue to the next turn.

6. When you have completed the tenth turn, press the SPACE bar to review the 'RESULTS' screen. Your total 'HITS' are listed, along with the total 'TARGETS' and your 'ACCURACY,' based on the ratio of 'HITS' to 'TARGETS.' The expert's accuracy is also listed for comparison. Press the SPACE bar and you are given a choice of repeating the lesson by pressing the numeral 1 key, or returning to the main menu to try FAT CHANCE or MATH GOLF by pressing the numeral 2 key.

MATH GOLF

1. If you pressed the numeral 3 key in the main menu, the computer takes a few seconds to load the program then a title frame with the words MATH GOLF appears. The question, 'DO YOU WANT SOUND?' is located at the base of the screen. Press the Y key (for yes) if you want sound to accompany the lesson. Press the N key (for no) if you do not want sound. Either key advances the display to the lesson description. Press the SPACE bar to view special key information. Press the SPACE bar again and the key information is continued:

Use the '+' key to ADD	Use the '*' key to MULTIPLY
Use the '-' key to SUBTRACT	Use the '/' key to DIVIDE

The question, 'DO YOU NEED INSTRUCTIONS?' is located at the base of the screen. Press the N key if you do not need to review the lesson instructions, and the lesson begins.

If you press the Y key, the 'INSTRUCTIONS' screen appears. The object of this

lesson is to get a hole-in-one by arranging numbers in mathematical expressions to equal as low a total as possible. A total of one is the best score. Press the SPACE bar to see 'HOW TO PLAY.' Your goal is to place three numbers and two operations in either expression 'A' or expression 'B,' depending upon which expression will give a lower total. A blank represents a space for a number; a white block represents a space for a mathematical operation.

Press the SPACE bar to continue to a 'SAMPLE PROBLEM.' After reviewing the sample, press the SPACE bar again. Remember, in a mathematical expression, all work inside parentheses is completed FIRST. Press the space bar to see how expression 'B' is solved. The numbers 4, 3 and 9 are combined with the subtraction and division operations to total 1. Press the space bar to begin the lesson.

2. Each less on has nine turns. The turn number is recorded as a 'HOLE' number in the phrase at the top of the screen. Below this phrase are three numbers to be used in the turn. At this time, choose the expression you want to work with: press the A key for expression 'A,' or the B key for expression 'B.'

3. After pressing ONE of these keys, the display changes. A 'TOTAL SCORE' box at the top of the screen keeps your updated score throughout the lesson. 'HOLE ____' records what turn you are on, and a list of the three numbers for the problem appears above whichever expression you have chosen to work on. A '?' flashes in the first blank of the expression. Determine how to arrange the three numbers along with any TWO mathematical operations (+,-,*,/) to create an expression with a whole number answer greater than zero but as close to one as possible. When you have decided upon a solution, enter a number in the first blank where the '?' is flashing.

The '?' moves to a block; enter an operation. The '?' moves to the second blank; enter a number and the '?' moves to the second block; enter a second operation. Finally, the '?' moves to the third blank; enter the last number. The expression now contains three numbers and two operations.

4. If your answer is a whole number greater than zero, the computer prints, 'GET SET...', 'BALL ROLLING...' while calculating the expression's total. When the computer is finished calculating, the answer is added to your 'TOTAL SCORE,' and a phrase appears at the base of the screen giving the lowest answer that could have been attained in either or both expressions.

If your answer is not a whole number, is less than one, or if you do not use all three numbers, the computer prints, 'TRY AGAIN!' Press the SPACE bar to try another combination for the same expression.

5. When you have completed the ninth turn, press the space bar to review the 'RESULTS' screen. Total 'HOLES' (turns), 'YOUR SCORE' and 'POSSIBLE SCORE' are listed, as well as the number of 'HOLES-IN-ONE' and your '9-HOLE TOTAL.' Press the space bar and you are given a choice of repeating the lesson by pressing the numeral 1 key, or returning to the main menu to try FAT CHANCE or CLAY PIGEONS by pressing the numeral 2 key.

Orbyte also carries a full line of business and productivity programs for the Commodore 64 as well as other programs in the ChallengeWare series. For a free catalogue or more information

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